

REMARKS

Claims 1 and 21 is amended; no claims are canceled, and no claims are added; as a result, claims 1-5 and 17-27 are now pending in the above-identified patent application.

Claim 1 was amended merely to delete the phrase "non-phase changing" from the claim. Support for the amendment to claim 21 can be found in the specification, for example, on page 7 at lines 25-26. No new matter has been added through the amendments to claims 1 and 21.

Claim Rejections- 35 U.S.C. § 112

Claims 1-5 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Office Action on page 2 states, "The claimed subject matter of 'injecting a plurality of non-phase changing sphere' is not supported by the original disclosure. All material is subjected to change phase if it is heated to a certain degree."

Further, claims 1-5 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Office Action on page 3 states, "The claimed subject matter of 'injecting a plurality of non-phase changing sphere' renders the scope of the claim indefinite since all material is subjected to change phase if it is heated to a certain degree."

While Applicant does not agree with these statements, (for example, wood or paper would combust if heated, not change phase, and if combusted, the products of combustion would not reform wood or paper when cooled), claim 1 has been amended to delete the phrase "non-phase changing" from the claim. Applicant therefore submits that the rejections of claims 1-5 under 35 U.S.C. § 112 first and second paragraphs have been overcome, and respectfully requests withdrawal of the rejections and reconsideration and allowance of all claims.

§103 Rejection of the Claims

Claims 21-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Elwell (U.S. 5,315,154) in view of Hanrahan (U.S. 5,945,217). The patent to Hanrahan is a removable reference under 35 U.S.C. § 102(e) even when used in a rejection under 35 U.S.C. § 103(a). Applicant does not admit that the Hanrahan patent is prior art to the present invention and respectfully reserves the right to swear behind the Hanrahan patent at a later date. Applicant chooses at this time to merely distinguish the Hanrahan patent.

The proposed combination of the Elwell patent and the Hanrahan patent fails to disclose all of the elements included in claims 21-23.

Claim 21 as amended now recites, "intermixing a plurality of fluid mixing spheres having a density about equal to the density of the phase change material into the phase change material." [Emphasis Added]. Applicant's representatives fail to find in the Elwell patent any disclosure of fluid mixing spheres having a density about equal to the density of the phase change material. The Elwell patent at column 3, lines 16-21 discloses using solid polyhydric alcohol or solid solutions of two or three polyhydric alcohols as a phase change material, and then at column 5, lines 56-58, discloses particles of aluminum, graphite, copper, or other material having a high thermal conductivity. However, there is no disclosure in the Elwell patent of fluid mixing spheres having a density about equal to the density of the phase change material, as aluminum, graphite, and copper are not described in the Elwell patent as having a density about equal to the alcohols use in the Elwell patent as phase change materials.

In addition, there is no disclosure in the Elwell patent that the particles described are fluid mixing spheres. The Elwell patent at column 5, lines 49-52 states, "The assembly 50 further includes elements in the form of particles 54 of a material having high thermal conductivity which are distributively embedded in the PCM 16." [Emphasis Added]. Thus, the Elwell patent discloses particles embedded in the phase change material. However, the Elwell patent fails to describe the particles being employed as fluid mixing spheres, and so the Elwell patent fails to disclose "fluid mixing spheres" as recited in amended claim 21.

The Hanrahan patent fails to remedy the deficiencies of the Elwell patent. Applicant's representatives fail to find in the Hanrahan patent a disclosure of fluid mixing spheres having a density about equal to the density of the phase change material, as recited in amended claim 21. Further, the Hanrahan patent at column 6, lines 32-36 states,

As best understood by reference to FIG. 3, a thermally conductive composite material of the present invention is illustrated which is substantially pore free, and which in one embodiment consists of a polymer matrix illustrated at A and thermally conductive particles illustrated at B. The polymer matrix of FIG. 3 consists of PTFE and polyethylene glycol.

Thus, the Hanrahan patent describes particles in a polymer matrix. However, there is no disclosure in the Hanrahan patent that the particles in the polymer matrix are used to mix any type of fluid, including a phase change material, and so the Hanrahan patent also fails to disclose fluid mixing spheres as recited in amended claim 21.

Because neither the Elwell patent or the Hanrahan patent, either alone or in combination, disclosure each of the elements recited in amended claim 21, the 35 U.S.C. § 103(a) rejection of claim 21 cannot stand. Further, claims 22-23 depend from claim 21, and so include all of the elements recited in claim 21. Thus, the proposed combination of the Elwell patent and the Hanrahan patent also fails to disclosure all of the elements in claims 22-23, and so the 35 U.S.C. § 103(a) rejection of claims 22-23 cannot stand.

For at least the reasons stated above, Applicant respectfully requests the withdrawal of the 35 U.S.C. § 103(a) rejection of claims 21-23, and reconsideration and allowance of all claims.

Allowed Subject Matter

Claims 17-20 and 24-27 are allowed. Applicant acknowledges and thanks the Examiner for the indication of allowance of claims 17-20 and 24-27.

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Title: METHOD FOR PASSIVE PHASE CHANGE THERMAL MANAGEMENT

Assignee: Intel Corporation

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6904 to facilitate prosecution of the above-identified application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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